A CONTRIBUTION TO THE BIOLOGY AND TAXONOMY OF THE OSTRACODS OF ILLIONIS

BY

CLARENCE CLAYTON HOFF

A.B., Bradley Polytechnic Institute, 1930

M.S., University of Illinois, 1939

AN ABSTRACT OF A THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ZOOLOGY IN THE GRADUATE SCHOOL OF THE UNIVERSITY OF ILLINOIS, 1941

Urbana, Illinois

1941

A CONTRIBUTION TO THE BIOLOGY AND TAXONOMY OF THE OSTRACODS OF ILLIONIS

BY
CLARENCE CLAYTON HOFF
A.B., Bradley Polytechnic Institute, 1930
M.S., University of Illinois, 1939

AN ABSTRACT OF A THESIS
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN
ZOOLOGY IN THE GRADUATE SCHOOL OF
THE UNIVERSITY OF ILLINOIS, 1941

Urbana, Illinois
1941

ACKNOWLEDGMENTS

The writer wishes to express his sincere appreciation to Prof. H. J. Van Cleave under whose direction this work was completed. Not only did he give valued suggestions and constructive criticisms during the course of the investigation but he also made it possible for the writer to examine material in his personal collection and in the accumulated research collections of previous students, especially S. W. Howe and Samuel Eddy, who have left material in his care.

The writer is also indebted to several persons, including Robert G. Yapp, Bertrand A. Wright, and Victor Sprague, for gratuitous collections containing material relative to the ostracods of Illinois. Dr. David H. Thompson, Dr. George W. Bennett, Dr. Donald F. Hansen, and Dr. Herman B. Chase merit the thanks of the writer for privileges allowed him during the course of the field work. These persons, all connected with the Illinois State Natural History Survey, made it possible for the writer to secure material from otherwise inaccessible areas.

A CONTRIBUTION TO THE BIOLOGY AND TAXONOMY OF THE OSTRACODS OF ILLINOIS

The ostracods in more than seven hundred collections from all parts of Illinois have been studied with regard to their taxonomy and ecology. Most of the collections were made during the spring and summer of 1940.

In the field, special effort was made to determine the factors which are responsible for the habitat range of various species. The nature of the bottom, the hydrogen-ion concentration, the current, and the nature of the vegetation were noted in detail. In the laboratory, a determination to species was made of the ostracods in each collection. All species new to the literature are described and figured. Many of the previously described species are redescribed from Illinois material because of the inadequacy of early specific diagnoses. An attempt has been made to bring the nomenclature into accord with that of modern European workers.

Type material will be deposited in the U. S. National Museum and in the collections of Dr. H. J. Van Cleave, Mr. Arthur G. Humes, and the writer.

Summary

1. The ostracod species of Illinois may be separated into four groups according to habitat: a) temporary running waters as vernal streams; b) temporary still waters as vernal ponds; c) permanent still waters as large lakes and the backwaters of rivers; and d) permanent running waters. While many species are typically found in one of these four habitats, others fall into more than one group.

2. Distribution of species is not correlated with the type of bottom but there is a distinct relationship between the amount of current in a habitat and the presence of certain species of ostracods. The hydrogen-ion concentration apparently has some effect upon distribution by inhibiting certain

species from extending their range to the southern part of the state where the waters are often acid.

3. Ostracods do not enter into immutable association either with other species of ostracods or species of plants found in the habitat.

4. Seasonal succession was studied in several vernal ponds in Champaign County, Illinois. Certain species are common to all the ponds while other species are found only in some of the ponds. There is a definite succession of species as the season advances, certain species being characteristic of the vernal season, others of the aestival.

5. Reproduction is both parthenogenetic and syngamic in some species of ostracods, in other species one or the other of the types may predominate in varying degree.

6. The life history of *Cypricercus reticulatus* is summarized.

7. Species of the genus Entocythere living on the gills of crayfishes are not strictly parasitic as formerly thought by some writers. In the species of Entocythere studied, there is no apparent host specificity.

8. Nineteen species of ostracods are reported for the first time from Illinois.

9. A complete discussion is given of the external morphology of the fresh-water ostracods as an aid to future study and specific determination. A summary is given of the morphology of various physiological systems.

10. All three of the ostracod families having fresh-water representatives are now known to occur in Illinois, as the family Darwinulidae is here reported in addition to the previously reported families Cypridae and Cytheridae.

11. As far as Illinois is concerned, certain species of ostracods are limited in their geographic distribution. Some are found only in the lake region near Chicago, others are found only in the southern part of the state.

12. Descriptions are given of the forty-one ostracod species reported from Illinois. Of these, twenty-eight have been previously reported in the literature while thirteen are

reported as new species. The already described species, which have been briefly diagnosed except where a redescription was necessary because of inadequate previous description, are as follows: *Candona punctata* Furtos 1933, *C. simpsoni* Sharpe 1897, *C. albicans* Brady 1864, *C. recticauda* Sharpe 1897, *C. distincta* Furtos 1933, *C. crogmaniana* Turner 1894, *C. caudata* Kaufmann 1900, *C. sigmoides* Sharpe 1897, *Cycloypris forbesi* Sharpe 1897, *C. sharpei* Furtos 1933, *Cypria obesa* Sharpe 1897, *C. ophthalmica* (Jurine 1820) Brady and Norman 1889, *Physocypria pustulosa* (Sharpe 1897) G. W. Müller 1912, *P. dentifera* (Sharpe 1897) G. W. Müller 1912, *Ilyocypris gibba* (Ramdohr 1808) Brady and Norman 1889, *I. bradyi* Sars 1890, *Cypricercus tuberculatus* (Sharpe 1908) *comb. nov.*, *C. fuscatus* (Jurine 1820) Sars 1928, *C. reticulatus* (Zaddach 1844) Sars 1928, *Cyprinotus incongruens* (Ramdohr 1808) Turner 1895, *C. pellucidus* Sharpe 1897, *Notodromas monacha* (O. F. Müller 1776) Lilljeborg 1853, *Cyprois marginata* (Strauss 1821) Zenker 1854, *Cypridopsis vidua* (O. F. Müller 1776) Brady 1867, *Potamocypris smaragdina* (Vávra 1891) Daday 1900, *Darwinula stevensoni* (Brady and Robertson 1870) Brady and Norman 1889, *Limnocythere reticulata* Sharpe 1897, and *L. illinoisensis* Sharpe 1897. The new species include *Candona fluviatilis, C. biangulata, C. sharpei, C. indigena, C. suburbana, C. fossulensis, C. acuta, Cypria turneri, C. mediana,* and *C. maculata* of the family Cypridae and *Limnicythere verrucosa, Entocythere illinoisensis,* and *E. copiosa* of the family Cytherdiae.

13. A new subfamily, Entocytherinae, has been established to include the two new and the three previously described Entocythere species.

14. Keys are given as an aid in the determination to species of the ostracods known to occur in Illinois. Included also is a complete key to the five known species of Entocythere, only two of which are reported from Illinois.

VITA

Clarence Clayton Hoff was born in Divide County, North Dakota on July 6, 1908. He attended grade schools in North Dakota, Montana, Idaho, and Illinois. After graduating from Peoria Central High School in 1926, he completed the requirements for graduation from Blackburn Junior College at Carlinville, Illinois in June, 1928. From June, 1928, to January, 1929, he was a clerk for the United States Engineer's Office of the War Department at Peoria, Illinois. During the second semester of the academic year of 1928-1929, the summer of 1929, and the year of 1929-1930, he attended Bradley College at Peoria, Illinois where he received the Bachelor of Arts degree in June, 1930. The following year he served as an instructor in the Community High School at Waterman, Illinois. He worked in industry from 1931 to 1938. In the fall of 1938, he registered in the graduate school of the University of Illinois and received the Master of Science degree in June, 1939. During the summer of 1939, he carried on research at the Isles of Shoals Marine Zoological Laboratory of the University of New Hampshire. From September, 1939 to June, 1941 (including the summer of 1940), he was a one-half time assistant in the Zoology Department of the University of Illinois. He is a member of the following societies: Illinois State Academy of Science, American Microscopical Society, A. A. A. S., Phi Sigma Pi, Pi Gamma Mu, Phi Sigma, Sigma Xi, and Phi Beta Kappa.

His publications are as follows:

1. Studies on the Lymnaeid Snail, *Fossaria parva* (Lea). Part I: Winter Habits. *Trans. of the Ill. State Acad. of Sci., 29*: 259-262. (1936).
2. Studies on the Lymnaeid Snail, *Fossaria parva* (Lea). Part II: Seasonal Life History. *Trans. of the Ill. State Acad. of Sci., 30*: 303-306. (1937).
3. Anatomy of the Ancylid Snail, *Ferrissia tarda* (Say). *Trans. of the Amer. Micro. Soc., 59*:224-242. (1940).
4. A case of correlation between infection of snail hosts with *Cryptocotyle lingua* and the habits of gulls. (In press; accepted by the Journal of Parasitology.)

Digitized by the Internet Archive
in 2026

https://archive.org/details/IA41549818_0015